A.6.3 Planetary Major Equipment Program

1. Scope of Program

This program element allows proposals for upgrading the analytical, computational, telescopic, and other instrumentation required by investigations sponsored by the Solar System Exploration programs entitled Cosmochemistry (Appendix A.4.1), Planetary Geology and Geophysics (A.4.2), Planetary Astronomy (A.5.1), Planetary Atmospheres (A.5.3), and Exobiology (A.6.1). New major instrumentation that is necessary for the conduct and/or quality of proposed research or that would significantly benefit the broad science community, may also be proposed. Major Equipment proposals may be submitted in conjunction with new scientific research proposals, or as an augmentation to existing multiple year proposals that are currently funded through OSS, for support of the Solar System Exploration science theme or Exobiology program element. A Planetary Major Equipment proposal that is not affiliated with such a "parent" OSS research proposal will not be considered.

2. Exclusions and Restrictions

• Instrumentation or support equipment costing less than approximately $20K is not considered major; requests for such items should be included in the body of the research proposal submitted to the appropriate Solar System Exploration program element in appendices A.4 and A.5 of this NRA.

• Instrumentation or equipment considered inappropriate for this Planetary Major Equipment program element includes personal computers or computer peripherals (unless these are integral parts of the instrumentation requested), miscellaneous support equipment, support contracts, and equipment repair where the repair does not involve significant enhancement of the instrument's basic capabilities, nor should funds be sought to support maintenance and continued operations of any instrument requested.

• In no event will proposals be considered that seek to design, develop, test, or evaluate new instruments that are to be considered for sale.

3. Proposal Requirements

Format. A proposal for major equipment should be written so that it can be reviewed as a stand-alone proposal, although it will be reviewed in connection with the appropriate "parent" science proposal or existing multiple year award. This is especially important for proposers who are operating under awards and who normally would submit only a progress report to request an additional funding allotment to complete a period of performance and because Planetary Major Equipment requests may also be reviewed by a multidisciplinary group external to the normal review process. Therefore, all such proposals should contain a short abstract and sections on project description,

management, and costs.

Objectives. Types and/or classes of instruments that are considered appropriate to be proposed for this program element are listed below, although requests for instruments not specifically identified in the list will receive equal consideration. Note that this list is not inclusive, but rather illustrative of the range of instrument types that are appropriate:

- Solid source, light element, and noble gas mass spectrometers
- Electron microprobe
- Scanning electron microscope
- Transmission electron microscope
- Camera-class ion microprobe
- Activation analysis equipment
- X-ray fluorescence analyzer
- Organic analysis instrumentation
- Static high pressure instrumentation
- Portable high-speed charge-coupled device for occultation measurements
- Telescopic instrumentation
- High resolution infrared spectrometer
- Large format optical charge-coupled device (2000 x 2000 pixels) with coronagraph
- Faint object infrared spectrometer
- Near infrared array camera with coronagraph
- Coolable white cells
- Instrumentation for planetary atmospheres laboratory studies
- Tunable dye-laser high resolution spectrometer
- Instrumentation for measurement of gas phase reaction rates, photochemical reaction rates and branching rates, and collisional, disassociation, ionization, or recombination cross-sections.

Project Description. The main body of the proposal should first identify the instrument to be acquired or developed and the type of use proposed. It should contain a strong justification, including a description of why the instrument is necessary for the investigator's research or how it would enhance that research, citing specific examples wherever possible. It should also demonstrate why the enhanced capability is important to planetary science in general. If an instrument is proposed for the benefit of the science community, the justification should emphasize how the enhanced capability would benefit the larger planetary science community. All justifications should address how the requested instrument relates to existing capabilities, both in the investigator's own as well as other facilities.

Any substantial collaboration with individuals not referred to in the budget, or use of consultants, should be described. Any anticipated cost-sharing or substantial institutional contributions should be described. It should be noted that cost sharing (between NASA and other agencies such as the Department of Energy or the National Science Foundation) is encouraged to the extent that NASA's share of the cost will ensure

adequate use by NASA investigators. This aspect of any proposed cost-sharing acquisition must be discussed in the proposal. If other agencies have been approached or have made tentative commitments, the proposal should document that and provide names and telephone numbers of appropriate officers in those agencies who can discuss their agencies' interest.

When it is expected that the acquisition or development of an instrument or facility will require more than one year, the proposal should cover the complete project but with a clear distinction between the efforts involved in each requested year.

Instrument Management and User Access. In addition to use by the Principal Investigator, if the proposed instrumentation is intended to be offered for use by the scientific community at large, a section is required that describes how the requested instrument would be managed. This description should include a statement of the percentage of the instrument's time that would be available to other users and a general statement regarding aspects of user access, such as time of day when access would be granted, whether access would be "hands on" or only by an operator or collaborator in the proposers group, any costs to be charged for use and how costing would be handled, and how users would apply to gain access (personal communication, formal proposal, etc.).

Requests for an instrument should specify how the instrument is to be used, whether by Principal Investigator (PI) and the PI research group only, or by the PI group as well as other investigators (facility instrument). These categories are defined below.

Investigator Instrument. An investigator instrument is an instrument acquired or developed by an investigator to support his or her research where he or she has full authority for its exclusive use and where there are no commitments to make the instrument available to other investigators.

Investigator Facility Instrument. An investigator facility instrument is an instrument acquired or developed by an investigator to support his or her research where an identified portion of its time is to be reserved for use by the PI but where an additional, specified portion of its time will be made available to other knowledgeable NASA planetary program investigators, and where all details or access, method of use, charging, and data rights are determined by the PI in negotiation with potential users.

Regional Facility Instrument. A regional facility instrument is an instrument of considerable cost or one that is limited to one location by virtue of its use on a specific beam source or telescope facility, but is acquired by a PI to support his or her research. A significant, specified portion of a regional facility instrument's time will be reserved for use by the PI, but a significant, specified portion of its time must also be available to other planetary program investigators. Unlike an investigator facility instrument, however, all details of access, announcement of availability, assistance to be provided on its use and methods of use (whether hands on or by an operator), charges, and data rights must be documented and agreed to by NASA and the sponsoring institution before NASA support is provided.

Costs. If the proposed instrument is to be acquired from commercial sources, only those costs directly associated with the acquisition, installation, and check-out of the instrument should be requested. Costs for maintenance or operation beyond the check-out period should not be included but instead must be requested in research proposals submitted to the appropriate discipline programs. If the instrument is to be developed by the investigator, all costs associated with the development and final check-out should be requested. Multiple year requests would be expected in these cases. In all cases, however, provision of an adequately documented cost section will facilitate evaluation, and, if selected, improve the likelihood of a timely award. It is especially important that each relevant cost should be fully explained and substantiated.

4. Programmatic Information

It is estimated that $1M will be available through this program element to support approximately 15 grants. In order to make the best possible use of the funds that may be available, proposers who request funds for Planetary Major Equipment are encouraged to seek cost sharing where appropriate and to propose collective use where that is reasonable, i.e., instruments that could be made available for use by other qualified members of the planetary science community. Cost-shared proposals are encouraged for very high cost instruments; the partners of such proposals must provide a written statement regarding long term funding and/or institutional commitments.

Evaluation factors will be those employed in evaluation of proposals received in response to this NRA, given in the *OSS Guidebook - 2001* with the following additions:

- In considering the relevance of the Planetary Major Equipment request to NASA's planetary and exobiology sciences objectives, attention will be focused on the added value that would be gained by the addition of the instrument capability to ongoing and anticipated research of the proposer, in particular, and to NASA's objectives in general.
- In evaluating the intrinsic merit of the request, additional factors that will be considered of equal weight are the scientific merit of the original proposal to which the request is tied and the value that the new or enhanced capability would add to science and/or education beyond that offered specifically to planetary science.

Planetary Major Equipment proposals will be reviewed by the relevant discipline peer review panel during the full proposal review and in the context of its "parent" research proposal. Those requests that most clearly meet the criteria outlined in terms of scientific merit, program balance, and funding as judged by the peer panels will be considered by the OSS Discipline Scientist on the basis of programmatic merit in developing a recommendation for selection.

All requests selected for Major Equipment support will be funded through augmentation

to the "parent" grant/contract for the basic research program. If such a request involves a multiple year period of performance for its development activities, an annual funding allotment to the basic continuing award will be provided only upon receipt, review, and approval of an Annual Progress Report and updated budget and/or statement of work as may be appropriate.

As noted in Section 1 of this Program Element, a Major Equipment proposal is to be submitted only in conjunction with a new scientific research proposal, or as an augmentation to an existing multiple year investigation currently funded in support of the OSS Solar System Exploration science theme. Therefore, the schedules for submission of Major Equipment NOI's and proposals are the same as those given in the *Summary of Solicitation* of this NRA for the relevant Solar System Exploration program elements.

IMPORTANT INFORMATION

As discussed in the *Summary of Solicitation* of this NRA, the Office of Space Science (OSS) is now using a single, unified set of instructions for the submission of proposals. This material is contained in the document entitled *OSS Guidebook for Proposers Responding to NASA Research Announcement – 2001* (or "*OSS Guidebook – 2001*" for short) that is accessible by opening "Research Opportunities and Data" from the menu at URL http://spacescience.nasa.gov , or directly at URL http://spacescience.nasa.gov/research/ossguidebook/ . This NRA's *Summary of Solicitation* also contains the schedule and instructions for the electronic submission of a Notice of Intent (NOI) to propose and a proposal's *Cover Page/Proposal Summary*, for electronic access to the required *Budget Summary* form, and the mailing address for the submission of a proposal.

Questions about this program element should be directed to the cognizant Discipline Scientist for the program element of this NRA to which the "parent" scientific research proposal is being submitted, or who is cognizant for an existing multiple year award for which a Planetary Major Equipment supplement is proposed as a supplement.

OMB Approval No. 2700-0087

RESEARCH OPPORTUNITIES IN SPACE SCIENCE - 2001
(ROSS-2001)

NASA Research Announcement
Soliciting Basic Research Proposals

NRA 01-OSS-01
Issued: January 26, 2001

Proposals Due
Starting April 6, 2001,
and Ending November 9, 2001

Office of Space Science
National Aeronautics and Space Administration
Washington, DC 20546-0001

RESEARCH OPPORTUNITIES IN SPACE SCIENCE - 2001
(ROSS-2001)

SUMMARY OF SOLICITATION

• INTRODUCTION AND GENERAL POLICIES

The stated mission of the Space Science Enterprise of the National Aeronautics and Space Administration (NASA) is to solve the mysteries of the universe, to explore the solar system, to discover planets around other stars, and to search for life beyond Earth. To carry out this mission, NASA's Office of Space Science (OSS) sponsors a broad range of research programs relevant to its four Science Themes, which are defined as:

- *Astronomical Search for Origins and Planetary Systems* (ASO) that addresses the origins of galaxies, stars, proto-planetary and extra-solar planetary systems, Earth-like planets, and the origin of life;
- *Solar System Exploration* (abbreviated as ESS) that seeks to understand all aspects of our Solar System, including the planets, satellites, small bodies, and solar system materials, and the search for possible habitats of life beyond Earth;
- *Structure and Evolution of the Universe* (SEU) that involves the study of cosmology, the large scale structure of the universe, the evolution of stars and galaxies, including the Milky Way and objects with extreme physical conditions, and an examination of the ultimate limits of gravity and energy in the Universe; and
- *The Sun-Earth Connection* (SEC) that concerns the Sun as a typical star and as the controlling agent of the space environment of the Solar System, especially the Earth.

Stated informally, these four themes seek to answer four fundamental questions, "How did the Universe begin and evolve?" "Where did we come from?" "Where are we going?" and "Are we alone?" Further information about these themes as well as access to the most recent Strategic Plans (as of late 2000) for both NASA and OSS may be found through the OSS homepage on the World Wide Web at http://spacescience.nasa.gov . In addition, this NRA may be found through the menu listings "*Research Opportunities and Data/OPEN Opportunities*" at this same Web site.

OSS pursues these fundamental science themes using a wide variety of both space flight programs and investigations in basic science and technology. This current NASA Research Announcement (NRA) ROSS-2001 solicits proposals for Supporting Research and Technology (SR&T) investigations that seek to understand naturally occurring space phenomena and space science-related technologies across a full range of science subdisciplines relevant to OSS interests. These program elements are listed in the index to Appendix A at the

end of this Summary of Solicitation. Table 1 lists these program elements in the order of their respective due dates for the submission of proposals, while Table 2 lists them in according to their order shown in Appendix A. As a guide to their relationships, Tables 1 and 2 also cross references these program elements to the OSS Science Themes as noted above. Appendix A contains detailed descriptions of each element, and questions about each may be directed to their respective Discipline Scientists who are identified in the section entitled "Programmatic Information" that concludes the description of each program element.

Beginning with the ROSS NRA issued in February 2000 (NRA 00-OSS-01), the program elements offered through this series of solicitations have been grouped into nine "clusters" as indicated in the Table of Contents of Appendix A at the end of this Summary of Solicitation. It is a goal to group the due dates for proposals for the program elements within each cluster closely together in time to allow for the possibility of the reallocation of funding within a cluster once all its related proposals are reviewed. In addition, recommendations from a comparative review of all clusters in mid-2001 will be used to help determine the cluster structure and content, as well as funding allocations for Fiscal Year's 2002-2004 (October 1, 2001, through September 30, 2003). Questions about this evolving approach to the structure and review of the OSS SR&T program may be sent to:

Dr. Guenter R. Riegler
Director
Research Program Management Division
Code SR
Office of Space Science
NASA Headquarters
Washington, DC 20546-0001
Telephone: 202-358-1588
E-mail: guenter.riegler@hq.nasa.gov
Facsimile: 202-358-3097

Although Tables 1 and 2 effectively cross-references these newly defined clusters to many of the traditional ROSS Program Elements and the four OSS Science Themes, the section entitled "INTRODUCTION AND OVERVIEW" of Appendix A also provides additional narrative material that expands on these relationships. Therefore, anyone interested in applying to this NRA is urged to read the relevant parts of this introductory section to Appendix A for a full understanding of whether their research interests are relevant to NASA OSS interests, and, if so, to which cluster and program element their proposal should be submitted. It is especially important to note that the overall objective of each of these program elements to contribute as effectively and directly as possible to the achievement of OSS strategic goals. Therefore, priority for selection will be given to those proposals that most clearly demonstrate the potential for making such contribution (see also the discussion of the evaluation criteria below).

Recommendations for funding for the proposals submitted to this NRA will be based on the peer evaluation of each proposal's intrinsic merit, its relevance to NASA's objectives, and its cost. For the purposes of this NRA: (i) by intrinsic merit is meant the proposal's science and technical merits, the capabilities of the proposing institution, the qualifications of the proposing personnel, and the overall standing of the proposal among similar proposals and/or evaluation against the state-of-the-art; (ii) by relevance to NASA's objectives is meant the proposal's relevance to the objectives of the OSS science program element as described in this NRA to which the proposal is submitted; and (iii) by cost is meant the reasonableness and realism of the proposal's requested budget, in addition to its size. In all cases, the Government's obligation to make awards is contingent upon the availability of appropriated funds from which payment can be made and upon the receipt of proposals in response to this NRA that NASA determines are acceptable for award.

Participation in this program is open to all categories of U.S. and non-U.S. organizations, including educational institutions, industry, nonprofit institutions, NASA Centers, and other Government agencies. Historically Black Colleges and Universities (HBCU's), other minority educational institutions, and small businesses and organizations owned and controlled by socially and economically disadvantaged individuals or women are particularly encouraged to apply. Participation by non-U.S. organizations in this program is encouraged subject to NASA's policy of no-exchange-of-funds (see further information in the "*OSS Guidebook for Proposers…*" discussed below).

• NEW INSTRUCTIONS FOR PREPARATION/SUBMISSION OF PROPOSALS

Starting in 1998, the Office of Space Science began to use a single, unified set of instructions for the submission of proposals for almost all of its NRA's that were incorporated into each NRA. Such standardization has proven to be of significant value to NASA to help ensure the uniform handling and processing of submitted proposals, as well as to researchers interested in responding to multiple program elements within the ROSS NRA's, or even different OSS NRA's. However, starting with this ROSS-2001 NRA, these proposal policies and procedures, as well as those for NASA's review and selection of proposals for funding, are now described in a separate document entitled "*Office of Space Science (OSS) Guidebook for Proposers Responding to NASA Research Announcement – January 2001*" (abbreviated as "*OSS Guidebook – 2001*") that is accessible by opening "*Research Opportunities and Data*" from the menu at the World Wide Web URL http://spacescience.nasa.gov, or may be directly accessed at URL http://spacescience.nasa.gov/research/ossguidebook/.

By reference, this *OSS Guidebook – 2001* is hereby incorporated into this ROSS–2001 NRA, and proposers to this NRA are responsible for understanding and complying with its procedures before preparing and submitting their proposals. In particular, its Chapter 2 ("Proposal Preparation and Organization") and Chapter 3 ("Proposal Submission Procedures") largely

replace the contents of "Chapter C" in most OSS NRA's issued during the previous three years. Proposers familiar with these past OSS NRA's will find that these instructions are essentially unchanged from those introduced starting in 1998. Also, note that the NASA-required proposal *Budget Summary* form is now available electronically through the Web site designated for the *Cover Page/Proposal Summary* (see Summary Information below) for printing in hard copy for submission with the hard copies of the proposal. The other chapters and appendices of this *OSS Guidebook – 2001* provide supplemental information about the entire NRA process, including NASA policies for the solicitation of proposals (including those involving non-U.S. participation), guidelines for writing complete and effective proposals, the NASA policies and procedures for the proposal review and selection processes, and for issuing and managing the awards to the institutions that submitted selected proposals, and Frequently Asked Questions (FAQ's) about a variety of proposal and award processes and procedures.

Comments and suggestions of any nature about this *OSS Guidebook – 2001* are encouraged and welcomed and may be directed at any time to Dr. David Bohlin, Research Program Management Division, Code SR, Office of Space Science, NASA Headquarters, Washington, DC 20546-0001; telephone: (202) 358-0880; E-mail: david.bohlin@hq.nasa.gov (if submitted by E-mail, use "Proposer's Guidebook" as the Subject of the message).

The World Wide Web site for submitting both a Notice of Intent (NOI) to propose and a proposal's *Cover Page/Proposal Summary* is given in the Summary Information below (Chapters 2 and 3 of the *OSS Guidebook – 2001* as discussed above contains detailed information about these two items). This Web site will be open for the submission of NOI's for any given program element in this NRA for typically 30 days, starting about 90 days before the proposal due date, and the site will be open for the submission of the other required proposal materials starting about 45 days before the proposal due date (see Tables 1 and 2 below for all schedules). A point of contact for assistance in accessing and/or using this Web site is given in the Summary Information below.

- OSS EDUCATION AND PUBLIC OUTREACH (E/PO) PROGRAM

OSS policy continues to strongly encourage participation by the space science community in education and public outreach activities with the goal of enhancing the Nation's formal education system and contributing to the broad public understanding of science, mathematics, and technology. A significant national program in space science education and outreach is now underway, and OSS's demonstrated contributions to education and outreach have now become an important part of the broader justification for the public support of space science (for further details open "*Education and Public Outreach*" on the OSS homepage at http://spacescience.nasa.gov).

Since 1998 when it started to offer the opportunity to propose E/PO activities in conjunction with its NRA's, the Office of Space Science has received many constructive comments from

members of the space science community as to how to improve its efforts to involve space scientists in education and public outreach. Based on the experience of the past few years and these comments, OSS is making a number of important changes in procedure this year. In particular, starting with this OSS ROSS-2001 NRA, E/PO proposals will be solicited only from those proposers whose research proposals have been already selected for an award. This change should decrease the overall workload on the space science community, increase the likelihood that more E/PO proposals of merit will be funded, and more effectively encourage successful science proposers to add an E/PO component to their research effort.

Therefore, only those proposers to this NRA who are eventually selected on the basis of the excellence of their research awards will be eligible to propose a supplemental E/PO program in accord with the OSS E/PO policies and guidelines. At the time of the release of this NRA it is anticipated that selected Principal Investigators will have two windows of opportunity to submit an E/PO proposal, either: (i) no later than 45 days after the date of the letter of selection of their parent research proposal, with the anticipation of starting the proposed E/PO activity within the first third of the first year of parent research award; or (ii) no later than 75 days before the yearly anniversary date of their award, with the anticipation of starting the proposed E/PO activity in conjunction with next yearly funding supplement of their multiple year award. In either case, consistent with the past E/PO policies and to ease the burden of NASA's administration of these supplemental awards, the total period of performance of an E/PO award will be restricted to that of its parent research award.

The current description of the underlying strategy and implementation plans for the OSS E/PO program may be found through the menu item *Education and Public Outreach* on the OSS homepage at http://spacescience.nasa.gov. The specific policies and procedures for writing and submitting supplemental E/PO proposals in conjunction with proposals selected through this NRA will be posted no later than the end of July 2001, which will be sufficiently early to allow those selected for the program elements with the earliest proposal due dates (see Table 1 below) to organize and submit an E/PO proposal. Questions and/or comments about this OSS E/PO program are sincerely welcomed and may be directed to Dr. David Bohlin, Research Program Management Division, Code SR, Office of Space Science, NASA Headquarters, Washington, DC 20546-0001 (telephone: 202-358-0880; E-mail: david.bohlin@hq.nasa.gov)

- ITEMS OF SPECIAL IMPORTANCE FOR THIS NRA

(1) Because this ROSS-2001 NRA is being released far in advance of many of the deadlines given in Tables 1 or 2, additional programmatic information for any given entry may develop before proposals are due. If so, such material will be added as an Amendment to this NRA as posted at its NRA Web site no later than 30 days before the proposal deadline. Although NASA OSS will also send an electronic alert of any such amendments to all subscribers of its electronic notification system (see Special Note (3) below), it is the

responsibility of prospective proposers to check this NRA Web site for updates concerning the program element(s) and/or cluster(s) of interest.

(2) OSS now requires the electronic submission of certain key elements of proposals through the World Wide Web (see below in the Summary Information), and this practice continues with this NRA. While every effort is made to ensure the reliability and ease of accessibility of this Web site, and to maintain a point of contact for assistance via E-mail, difficulty in accessing and/or using this site may arise at any point on the Internet including the user's own equipment. Therefore, prospective proposers are urged to familiarize themselves with this site and to submit the required proposal materials well in advance of the deadline(s) of the program element(s) of interest.

(3) OSS maintains an electronic notification system to alert interested subscribers of the impending release of its research program announcements. Subscription to this service is accomplished through the menu item *Get E-mail Announcements* on the OSS home page at http://spacescience.nasa.gov by following the instructions for *Space Science Research Announcements*. Owing to the increasingly multidisciplinary nature of OSS programs, this electronic service will notify subscribers of all future NASA OSS program announcements regardless of its type and objective (10 to 15 per year). Regardless of whether this service is subscribed to or not, all OSS research announcements may be accessed from the Web as soon as they are posted (about 8:30 a.m. Eastern Time on the day of release) through *Research Opportunities and Data* on the OSS homepage.

- SUMMARY INFORMATION APPLICABLE TO THIS NRA

- Program alphanumeric identifier: NRA 01-OSS-01

- Date of NRA issue: January 26, 2001

- Guidance for preparation and submission of proposals:

  "*OSS Guidebook for Proposers – 2001*" at URL
  http://spacescience.nasa.gov/research/ossguidebook/

- Submission of *Notice of Intent* (NOI) to propose:

  - Due date: See Table 1 or 2 below for program element of interest (typically 60 days prior to the Proposal Deadline)

  - Web site for electronic submission: http://props.oss.hq.nasa.gov (contact for help: deb.tripp@hq.nasa.gov)

- Electronic submission of the proposal's *Cover Page/Proposal Summary*:

  - Deadline: See Table 1 or 2 below for program element of interest.

  - Web site for electronic submission: http://props.oss.hq.nasa.gov (open for submissions starting about 45 days in advance of proposal due date for each program element; (contact for help: deb.tripp@hq.nasa.gov)

- Web site for download of proposal *Budget Summary* form:

  http://props.oss.hq.nasa.gov
  (contact for help: deb.tripp@hq.nasa.gov)

- Submission of hard copy of proposals:

  - Page limits: Default values are given in Section 2.3 of "*OSS Guidebook – 2001*" (unless otherwise specified in Appendix A of this NRA).

  - Required number: Signed original plus 15 copies (unless otherwise specified in Appendix A of this NRA).

  - Deadlines: 5 p.m. Eastern Time on dates in Table 1 or 2 below.

- Address for submission by US Postal Service, commercial delivery, or courier:

Name of Program Element
ROSS-2001 NRA
NASA Peer Review Services
Suite 200
500 E Street, SW
Washington, DC 20024
Telephone: (202) 479-9030

- Selecting Official: Director or Deputy Director
  Research Program Management Division
  Office of Space Science

- Announcement of selections: Goal: 150 days after proposal due date.

- Initiation of funding for new awards: Goal: 46 days after proposal selection.

- Further information:

  - Specific science program elements: Discipline Scientist listed for each program element in Appendix A.

  - General NRA policies and procedures: Dr. David Bohlin
    Research Program Management Division
    Code SR
    Office of Space Science
    National Aeronautics and Space Administration
    Washington, DC 20546-0001
    Phone: (202) 358-0880
    E-mail: david.bohlin@hq.nasa.gov

Your interest and cooperation in responding to this ROSS-2001 NRA are appreciated. Comments about the inclusive nature and/or structure of this NRA for the OSS supporting research and analysis programs are welcome and may be directed to either the Discipline Scientists identified for each program element in Appendix A or to the point of contact for General NRA Procedures identified above.

Alan N. Bunner
Science Program Director
Structure and Evolution of the Universe

Jay Bergstralh
Acting Science Program Director
Solar System Exploration

Anne L. Kinney
Science Program Director
Astronomical Search for Origins
and Planetary Systems

George L. Withbroe
Science Program Director
The Sun-Earth Connection

APPENDIX A. DESCRIPTION OF PROGRAM OPPORTUNITY Page

TABLE 1

SCIENCE PROGRAM ELEMENTS SOLICITED IN THE ROSS-2001 NRA
(in order of the proposal due dates)

Cluster	NRA Appendix	Science Program Element (see Appendix A)	NOI Due Date	Proposal Due Date	Relevant OSS Science Themes [1]			
					ASO	SEU	ESS	SEC
A.8	A .8.1	X-ray and Gamma-ray Astrophysics	2/23/01	4/06/01		X		
A.8	A.8.2	Cosmic Ray Astrophysics	2/23/01	4/06/01		X		
A.1	A.1.2	Sun-Earth Connection Guest Investigator	2/23/01	4/20/01				X
A.5	A.5.3	Planetary Atmospheres [2]	2/23/01	4/20/01			X	
A.5	A.5.4	Planetary Suborbital Research	2/13/01	4/20/01			X	
A.1	A.1.1	Sun-Earth Connection Theory	3/02/01	4/27/01				X
A.1	A.1.4	Astrophysics Data	3/02/01	5/04/01	X	X	X	
A.1	A.1.5	Long-Term Space Astrophysics	3/02/01	5/04/01	X	X	X	
A.4	A.4.2	Planetary Geology and Geophysics [2]	3/09/01	5/10/01			X	
A.4	A.4.1	Cosmochemistry [2]	3/23/01	5/18/01	X		X	
A.4	A.4.3	Origins of Solar Systems	3/30/01	6/01/01	X		X	
A.5	A.5.1	Planetary Astronomy [2]	4/13/01	6/15/01	X		X	
A.5	A.5.2	Near Earth Object Observations	4/13/01	6/15/01	X		X	

A.7	A.7	Space Astrophysics Research and Analysis [3]	4/06/01	6/21/01	X	X		
A.3	A.3	Geospace Sciences [4]	5/02/01	6/22/01			X	X
A.1	A.1.6	Astrophysics Theory	5/25/01	7/20/01	X	X		
A.6	A.6.1	Exobiology [2]	6/08/01	8/03/01	X		X	
A.6	A.6.2	Planetary Instrument Definition and Development	6/07/01	8/08/01			X	
A.2	A.2	Solar and Heliospheric Physics	6/22/01	8/24/01				X
A.4	A.4.4	Mars Data Analysis	7/06/01	8/31/01			X	
A.1	A.1.3	Living With a Star Targeted Research and Technology	7/18/01	9/19/01				X
A.9	A.9.1	Applied Information Systems Research	7/27/01	9/26/01	X	X	X	X
A.5	A.6.4	Astrobiology Science and Technology	9/14/01	11/09/01	X		X	
A.6	A.6.3	Planetary Major Equipment [2]	See ESS Element of	Program interest. [2]	X		X	
A.5	A.4.5	Discovery Sample Return Lab. Instruments and Data Analysis	TBD	TBD	X		X	

[1] ASO: Astronomical Search for Origins; SEU: Structure and Evolution of the Universe; ESS: Solar System Exploration; SEC: The Sun-Earth Connection.
[2] The proposals for Planetary Major Equipment program element A.6.3 may be submitted in conjunction with program elements A.4.1: Cosmochemistry; A.4.2: Planetary Geology and Geophysics; A.5.1: Planetary Astronomy; A.5.3: Planetary Atmospheres; and A.6.1 Exobiology.
[3] The Space Astrophysics Research and Analysis cluster includes the following program elements that were separately identified in the ROSS-1998 and -1999 NRA's: Ultraviolet, Visible, and Gravitational Astrophysics; Infrared/Submillimeter/Radio/Interferometry Astronomy; Space Astrophysics Detectors; and Astrophysics Suborbital.
[4] The Geospace Sciences cluster includes the following program elements that were separately identified in previous ROSS-1998 and -1999 NRA's: Ionospheric, Thermospheric, and Mesospheric (ITM) Physics; Magnetosphere Physics; and Magnetospheric and ITM Low Cost Access to Space.

TABLE 2

SCIENCE PROGRAM ELEMENTS SOLICITED IN THE ROSS-2001 NRA
(in order of NRA Table of Contents)

Cluster	NRA Appendix	Science Program Element (see Appendix A)	NOI Due Date	Proposal Due Date	Relevant OSS Science Themes [1]			
					ASO	SEU	ESS	SEC
A.1	A.1.1	Sun-Earth Connection Theory	3/02/01	4/27/01				X
A.1	A.1.2	Sun-Earth Connection Guest Investigator	2/23/01	4/20/01				X
A.1	A.1.3	Living With a Star Targeted Research and Technology	7/18/01	9/19/01				X
A.1	A.1.4	Astrophysics Data	3/02/01	5/04/01	X	X	X	
A.1	A.1.5	Long-Term Space Astrophysics	3/02/01	5/04/01	X	X	X	
A.1	A.1.6	Astrophysics Theory	5/25/01	7/20/01	X	X		
A.2	A.2	Solar and Heliospheric Physics	6/22/01	8/24/01				X
A.3	A.3	Geospace Sciences [4]	5/02/01	6/22/01			X	X
A.4	A.4.1	Cosmochemistry [2]	3/23/01	5/18/01	X		X	
A.4	A.4.2	Planetary Geology and Geophysics [2]	3/09/01	5/10/01			X	
A.4	A.4.3	Origins of Solar Systems	3/30/01	6/01/01	X		X	
A.4	A.4.4	Mars Data Analysis	7/06/01	8/31/01			X	
A.5	A.4.5	Discovery Sample Return Lab. Instruments and Data Analysis	TBD	TBD	X		X	

A.5	A.5.1	Planetary Astronomy [2]	4/13/01	6/15/01	X		X	
A.5	A.5.2	Near Earth Object Observations	4/13/01	6/15/01	X		X	
A.5	A.5.3	Planetary Atmospheres [2]	2/23/01	4/20/01			X	
A.5	A.5.4	Planetary Suborbital Research	2/13/01	4/20/01			X	
A.6	A.6.1	Exobiology [2]	6/08/01	8/03/01	X		X	
A.6	A.6.2	Planetary Instrument Definition and Development	6/07/01	8/08/01			X	
A.6	A.6.3	Planetary Major Equipment [2]	See ESS Element of	Program interest. [2]	X		X	
A.5	A.6.4	Astrobiology Science and Technology	9/14/01	11/09/01	X		X	
A.7	A.7	Space Astrophysics Research and Analysis [3]	4/06/01	6/21/01	X	X		
A.8	A.8.1	X-ray and Gamma-ray Astrophysics	2/23/01	4/06/01		X		
A.8	A.8.2	Cosmic Ray Astrophysics	2/23/01	4/06/01		X		
A.9	A.9.1	Applied Information Systems Research	7/27/01	9/26/01	X	X	X	X

[1] ASO: Astronomical Search for Origins; SEU: Structure and Evolution of the Universe; ESS: Solar System Exploration; SEC: The Sun-Earth Connection.
[2] The proposals for Planetary Major Equipment program element A.6.3 may be submitted in conjunction with program elements A.4.1: Cosmochemistry; A.4.2: Planetary Geology and Geophysics; A.5.1: Planetary Astronomy; A.5.3: Planetary Atmospheres; and A.6.1 Exobiology.
[3] The Space Astrophysics Research and Analysis cluster includes the following program elements that were separately identified in the ROSS-1998 and -1999 NRA's: Ultraviolet, Visible, and Gravitational Astrophysics; Infrared/Submillimeter/Radio/Interferometry Astronomy; Space Astrophysics Detectors; and Astrophysics Suborbital.
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